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ABSTRACT

An N-shaped nonlinear resistor circuit using floating gate MOSFETs to realize various N-shaped characteristics that can be approximated by piecewise linear functions of third to seventh orders and further to realize N-shaped V-I characteristics that can variously change those characteristics by use of external voltages.

A Λ -type nonlinear resistor circuit (1) and a V-type nonlinear resistor circuit (2) using multi-input floating gate MOSFETs are connected in parallel, and the currents of the Λ -type and V-type nonlinear resistor circuits are added together, thereby providing various N-shaped voltage-current characteristics.